

### REMARKS

Claims 1-11 are pending. The specification has been amended to remove a typographical error.

Claim 8 has been amended for clarity.

Support for new claim 11 can be found in claim 1.

No new matter has been added by way of the above-amendment.

#### I. Information Disclosure Statement (IDS)

The Examiner has not provided Applicants with an initialed copy of the PTO-SB08 form filed with the Information Disclosure Statement filed March 23, 2007. An initialed copy thereof is respectfully requested from the Examiner in the next communication.

#### II. Priority Documents

The present application is a national phase 371 application based on PCT/JP2005/23268 which claims priority to JP 2004-377223. The Examiner is respectfully requested to acknowledge receipt of a copy of the certified copy of JP 2004-377223 from the International Bureau in the next communication.

#### III. Issues Under 35 USC 112, 2<sup>nd</sup> paragraph

Claims 4, 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, for being indefinite. Applicants respectfully traverse the rejection.

In the paragraph numbered as "2" in the outstanding Office Action, the Examiner states:

In lines 4-5 of claim 4, applicants recite "*3.1 percent by weight or more* ", which contravenes claim 1 line 10, where applicants recite the limits of "*2 percent by weight or more* ". It is suggested that the limitations of the

dependent claim be correlated to the recitation of claim 1. (Emphasis in original).

The Examiner notes that claim 4 recites a range of 3.1wt% or more. Also, the Examiner notes that claim 1 recites a range of 2wt% or more. Accordingly, it is clear that claim 4 further limits claim 1. However, the Examiner states that the range of claim 4 "contravenes" the range of claim 1.

Applicants do not mean to sound condescending, but Applicants are confused. According to the website <http://www.thefreedictionary.com> (June 28, 2007), the term "contravene" means: "To act or be counter to; violate." It is respectfully submitted that Applicants are confused as to how a narrow range of "3.1wt% or more" in claim 4 contravenes the broader range of "2wt% or more" in claim 1. Should the Examiner maintain this rejection, Applicants respectfully request clarification as to how the concentration range of the methyl acetate of claim 4 renders claim 4 indefinite.

With respect to claim 6, the Examiner finds that claim 6 is indefinite for the same reason that claim 4 was found to be indefinite. The Examiner notes that claim 6 recites a narrow production rate range of "15 mol/L hr or more" and claim 1 recites a broad range of "11 mol/L hr or more." However, the Examiner states that the range in claim 6 "contravenes" the range in claim 1. Should the Examiner maintain this rejection, Applicants respectfully request clarification as to how the production rate range of claim 6 renders claim 6 indefinite.

With respect to claim 8, the Examiner states:

In line 6 of claim 8, the applicants may have intended to recite "residual acetic acid" in lieu of "recovering acetic acid". In line 9 of claim 8, applicants may have intended to recite "residual acetic acid" in lieu of "residual process mixture".

Applicants respectfully submit that claim 8 is sufficiently clear to satisfy 112, 2<sup>nd</sup> paragraph, but have amended claim have amended claim 8 to improve the clarity. The Examiner will note that beginning at line 3 of claim 8, the instant method includes:

a step of separating the reaction mixture into

- a) acetic acid and
- b) a process mixture comprising residual components
- a step of recovering the a) acetic acid
- a step of separating and removing carbonyl impurities from the b) process mixture to give
- d) a residual process mixture; and
- a step of recycling d) the residual process mixture to the reactor.

Accordingly, claim 8 is clear.

Based on the above-comments and amendment, Applicants respectfully submit that the claims particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Accordingly, withdrawal of the rejection is respectfully requested.

#### IV. Prior art based issues:

The Examiner has made the following rejections:

- (A) Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (EP0687662, EP'662), and further in view of Ditzel et al. (US5939585, US'585); and
- (B) Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Miura et al. (EP0687662, EP'662), and further in view of Cheung et al. (US7005541, US'541).

Applicants respectfully traverse Rejection (A) and Rejection (B).

#### IV - A. Claims 1 to 7

The present invention is drawn to a process for producing acetic acid keeping the acetaldehyde content of reaction mixture to 500 ppm or less by reacting methanol with carbon monoxide in the presence of a rhodium catalyst, an iodide salt, methyl iodide, methyl acetate and

water, and is characterized by the process where the reaction is carried out at a carbon monoxide partial pressure in a gaseous phase of a reactor of 1.05 Mpa (=10.5 bar) or more and/or at a methyl acetate content of the reaction mixture of 2 percent by weight or more to thereby keep the production rate of acetaldehyde (by-product) to 1/1500 or less of the production rate of acetic acid.

US'585 recites that adjustment of a methyl acetate concentration by the amount of water brings faster production rate of acetic acid, however, does not disclose nor suggest on adjustment of carbon monoxide partial pressure and a methyl acetate concentration to thereby restrain the production of by-product, acetaldehyde, which degrades the quality of the main object, acetic acid.

EP'662 recites the method to remove acetaldehyde in order to maintain an acetaldehyde concentration in the reaction liquid at a certain density or lower, however, does not disclose nor suggest on adjustment of carbon monoxide partial pressure and a methyl acetate concentration to thereby restrain the production of acetaldehyde.

The inventions of Claim 1 to 7 in the present application are remarkably effective in this regard. In the present invention, it enables to improve the production rate of acetic acid while restraining the production of by-product, acetaldehyde, which degrades the quality of the main object, acetic acid even under a low-hydrogen partial pressure. According to the production method of the present invention, significant amount of energy to remove water is not required, for water concentration of the reaction mixture can be set lower. Furthermore, the acetic acid that is obtained from the process of the present invention can be used suitably for chemical synthesis since the by-product, acetaldehyde content can be drastically lower compared to the conventional method.

35 U.S.C.103(a) should not apply since the inventions related to Claim 1 to 7 consist of the content that are neither taught nor suggested in the cited documents US'585 and EP'662, and the significant effect is not predictable from the cited documents US'585 and EP'662. Accordingly, withdrawal of Rejection (A) is respectfully requested.

IV - B. Claims 8 to 10

The Examiner states that EP '662 fails to teach or fairly suggest separating acetic acid during purification. The Examiner relies on US '541 to cure this deficiency. As mentioned above, EP '662 is deficient for more than simply not teaching separating acetic acid during purification.

Since US '541 fails to cure the deficiencies recited above (including adjustment of carbon monoxide partial pressure and a methyl acetate concentration to thereby restrain the production of acetaldehyde), then a *prima facie* case of obviousness cannot be said to exist and withdrawal of Rejection (B) is respectfully requested.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Conclusion

In view of the above remarks, it is believed that claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq., Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Application No. 10/567,900  
Amendment dated June 29, 2007  
Reply to Office Action of April 2, 2007

Docket No.: 3273-0219PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By

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